# CAST’s UDL LESSON BUILDER

### Lesson Overview

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| **Title:** | Newton's Laws of Motion |
| **Author:** | John Leitner |
| **Subject:** | Honors Physics |
| **Grade Level(s):** | 11-12 |
| **Duration:** | 86 minutes |
| **Subject Area****:** | Kinematics |
| Unit Description: | Motion |
| Lesson Description for Day: | Newton's Three Laws of Motion |
| State Standards: | Use Newton's Laws of Motion to explain the outcome of a physics interaction between two objects. |

### Goals

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| **Unit Goals:** | Using Newton's Law of motion to predict physics interactions and phenomena. |
| **Lesson Goals:** | Student's should be able to use the force, acceleration, and mass variables to predict the outcome of a push or pull interaction. |

### Methods

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| **Anticipatory Set:** | A think-pair-share question will be created by each student pair and then addressed to the entire class to see if the answers to these questions are already know or if we need to dig deeper into the topic of motion to discover the answers. |
| **Introduce and Model New Knowledge:** | A demonstration of a mass pulley system will be offered to the entire class.  * a prezi will be offered to define the main concepts of Newton's three Laws of Motion. * Model the problem solving method by showing a sample problem for acceleration. |
| **Provide Guided Practice:** | A guided reading section, consisting of several vital paragraphs, will be read and discussed in class.  * A practice problem solving for the acceleration of an object under a non-frictional situation will be solved by the students and then immediately discussed and analyzed as a class. * Using the internet to practice |
| **Provide Independent Practice:** | The students will be offered three choices of proof of their understanding of Newton's Three Laws of motion. 1. Create a mind map on the method they would use to solve an acceleration problem.  2. Design an experiment to examine and solve for the acceleration of an object.  3. Complete a short lab activity to solve for the acceleration of a massive object. |

### Assessment

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| **Formative/Ongoing Assessment:** |  |
| **Summative/End Of Lesson Assessment:** | A test consisting of one problem to solve for the acceleration of an object using the net force and a second question in which students will explain the tools they would use in experimentation to solve for the acceleration of an object using Newtonian mechanics. |

### Materials

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| Access to the internet and several computers |
| Lab equipment to perform the experiments: wooden blocks, lab carts, pulleys, strings, Newton scales, calculators, meter sticks and protractors |
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